

Image projector and method of operating same

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The invention relates to an image projector with a High-Intensity-Discharge HID lamp as defined in the preamble of Claim 1 and a method of operating it as defined in the preamble of Claim 17.

Such image projectors with HID lamps are basically known from the prior art, where they are primarily used for video or presentation purposes. These lamps are distinguished by a very high luminous efficacy in combination with a small volume. However, they have the disadvantage that their voltaic arc suddenly jumps in an uncontrolled way, i.e. at unforeseeable times. Jumping means that the arc takes up a new position which is about 10 to more than 250  $\mu\text{m}$  away from the original position. The human eye perceives this arc jumping as a brief jolt in a displayed or projected image. For people with sensitive eyes, this effect can be disturbing when viewing an image, and it is therefore necessary to eliminate it.

The properties of the projection system connected to the output of the lamp imply that the arc jump has the physical effect of changing the brightness, i.e. the brightness distribution and / or the overall brightness, of the displayed image in an order of magnitude of a few percentage points.

EP 766906 A1 discloses a very effective method of avoiding the effect of the arc jump as such and the associated changes in the brightness of the light in the image projector's beam path. The method disclosed therein provides for feeding the HID lamp with an electric current whose flow presents an additional pulse shortly before commutation. However, a disadvantage of this known method is that it is not compatible with modern display devices, which use a time-sequential display method. Such display devices require lamps with a constant overall brightness and brightness distribution, which cannot be ensured with the method known from EP 766906 A1 because of the additional current pulse.

Starting from this prior art, it is therefore the object of the present invention to develop a known image projector and a known method for operating it, in such a way that the effects of the arc jump in the form of changes in the overall brightness and/or the brightness distribution of an image projected on a picture screen device are not perceptible to the human eye.